DEVRAN® 224HS

High Solids Epoxy Coating

Cat. # 224FNXXXX/224GN0908

PRODUCT DESCRIPTION

Generic: Catalyzed Polyamide Epoxy

General Description: A high performance, multi- purpose, surface tolerant, two-component chemically-cured epoxy semi-gloss coating for industrial or high performance architectural coating (HIPAC) applications. For use on properly prepared steel or masonry surfaces.

Typical Uses: Ideal for structural steel, piping, tanks, and equipment in chemical, fertilizer, power plants, petroleum refineries, pulp and paper mills, water and sewage treatment plants and mining operations.

Can also be used in the hard service areas of correctional facilities, schools, commercial and restaurant kitchens were a high performance architectural coating (HIPAC) is required.

Special Qualifications: Performance alternate for Federal Specifications TT-C-550, TT-C-535B, MIL-C-22750F, and MIL-P-23377F Type I.

FEATURES

Advantages:

- Excellent corrosion protection
- Resists splash and spillage of solvents, alkalis, salts, moisture, oils, greases, foodstuffs and detergents
- Cold weather cure – Use cold weather additive for application down to 25°F (-4°C)
- Surface tolerant
- Low VOC
- Self-priming on steel or masonry
- Abrasion resistant
- High build/high solids coating

Limitations of Use: Exterior exposure will cause a color change, early dulling, and loss of gloss, but this does not affect protective properties. Epoxy coatings may yellow during application and cure if exposed to the combustion by-products of improperly vented fossil fuel burning heaters. Commonly finished with DEVTHANE® Urethane Enamel for maximum exterior color & gloss retention. Use only products that are in compliance with local VOC regulations.

SPECIFICATION DATA

Color: Off White, ready-mixed & custom colors
Finish: Semi-Gloss
Weight/Gallon: 12.5 lbs./gal. (1.5 kg/L) – varies with color.
VOC (EPA24)**:** 1.8 lbs./gal. (212 g/L) – varies with color.
When thinned 5% with T-10 thinner, VOC < 250 g/L(2.08 lbs./gal)
When thinned 10% with T-10 thinner, VOC < 275 g/L (2.29 lbs./gal)
224FN3501 VOC (EPA 24) (TBAC Exempt): < 100 g/L (0.83 lbs./gal.)
224FN3501 VOC (TBAC Non-Exempt): <250 g/L (2.08 lbs./gal.)
Solids By Volume (ASTM D 2697-7days)**:** 75%±2% – varies with color.
Theoretical Coverage at 1.0 Mil (25 microns) **Dry:** 1203 sq. ft./gal. (29.5 m^2/L).
Recommended Film Thickness: 4.0-8.0 mils (100-200 microns) dry – 5.3-10.7 mils (155-267 microns) wet.
Systems: Please consult the appropriate system guide, the particular job specification or your ICI Paints Representative for proper systems using this product. Systems must be selected considering the particular environment involved.
Minimum Dry Time (ASTM D 1640)**:** At 6 mils (150 microns) DFT (Use of cold weather additive will decrease times noted. See cold weather applications on back page.)

Substrate Temperature	40°F (4°C)	60°F (16°C)	70°F (21°C)	80°F (27°C)
Minimum Recoat	20 Hours	8 Hours	6 Hours	3 Hours
Dry Hard	42 Hours	16 Hours	9 Hours	5 Hours
Maximum Recoat				
Self	30 Days	30 Days	30 Days	30 Days
359, 389	15 Days	10 Days	7 Days	7 Days
378, 379	10 Days	7 Days	5 Days	3 Days

Ventilation, film thickness, humidity, thinning and other factors can influence the rate of dry.
Warning: The above table provides general guidelines only. Always consult your ICI Paints Representative for appropriate recoat windows since the maximum aged recoat time of this product may be significantly shortened or lengthened by a variety of conditions, including, but not limited to humidity, surface temperature, and the use of additives or thinners. The use of accelerators or force curing may shorten the aged recoat of individual coatings. The above recoat windows may not apply if recoating with a product other than those listed above. If the maximum aged recoat window is exceeded, please consult your ICI Paints Representative for appropriate recommendations to enhance adhesion. Failure to observe these precautions may result in intercoat delamination.
Shelf Life: Over 24 months at 77°F (25°C) – unopened
Mix Ratio By Volume: 1 (base): 1 (converter)–see mixing instructions.
Induction: 15 minutes at 60-80°F (16-27°C) – see mixing instructions.
Pot Life: 6 hours @ 77°F (25°C) & 50% R.H

PERFORMANCE DATA

Adhesion: (ASTM D 4541) – Excellent
Salt Spray Resistance: (ASTM B 117) – Excellent
Direct Impact Resistance: (ASTM D 2794) – Very Good
Abrasion Resistance: (ASTM D 4060) – Excellent
Humidity Resistance: (ASTM D 4585) – Excellent
Exterior Exposure: (45°South – Lt. Industrial) – Very Good (Normal, expected loss of gloss for epoxy coatings)
Service Temperature Limits: 250°F (121°C) dry
Hardness: (ASTM D 3363), 7 day cure @ 77°F (25°C) – 3H

Chemical Resistance: (ASTM D 1308 – 24 hr. contact) – Excellent. Resists splash and spillage of alkalis, salts, moisture, oils, greases, food stuffs, and detergents, 50% 3, 25% citric acid, 25% lactic acid, 10% sulfuric acid, crude oil, 10% hydrochloric acid, 20% tannic acid, 5% sodium chloride, 10% ammonium hydroxide, sewage, 50% ethanol, gasoline, methanol, kerosene, naphtha, xylol. All results based on testing of system comprised of two coats of DEVRAN 224HS coating at 4 mils (100 microns) DFT per coat.

DANGER! COMBUSTIBLE. HARMFUL OR FATAL IF SWALLOWED. Read label and Material Safety Data Sheet Prior to Use. See other cautions on last page. DSF2-0790

GENERAL SURFACE PREPARATION

Surfaces must be dry, clean, free of oil, grease, form release agents, curing compounds, laitance, other foreign matter and be structurally sound. Remove all loose paint, mortar spatter, mill scale, and rust. All direct to metal coatings provide maximum performance over blasted surfaces. There are situations and cost limitations which preclude blasting. DEVRAN® 224HSwas designed to provide excellent protection over less than ideal surface preparation. The minimum standard for non-immersion service is SSPC-SP2 (ISO-St2); for immersion service the minimum standard is SSPC-SP10 (ISO-Sa2 1/2). **These minimum surface preparation standards apply to steel that has been previously abrasive blasted, coated and deteriorated.** Where very rusty surfaces still remain after cleaning use PRE- PRIME™ 167 Sealer before application of DEVRAN 224HS coating. **All direct to metal coatings provide maximum performance over near-white blasted surfaces.**

New Surfaces: Steel –New steel surfaces should be initially blasted to near-white metal surface cleanliness in accordance with SSPC-SP10 or ISO-Sa2 1/2 for immersion service or commercial blast cleanliness in accordance with SSPC-SP6 or ISO-Sa2 for non-immersion service. Blast profile on steel should be 1.2 to 2.5 mils (38-63 microns) in depth and be of a sharp, jagged nature as opposed to a "peen" pattern (from shot blasting). Surfaces must be free of grit dust. **Concrete Block –**Remove loose aggregate and repair voids. Fill with this product or TRU-GLAZE-WB™ 4015 filler. **Concrete Floors, Poured Concrete –** Cure at least 30 days. Acid etch or abrasive blast slick, glazed concrete or concrete with laitance. Prime with PRE-PRIME 167 sealer or this coating. **Galvanized Steel –**Remove dirt and oils by solvent cleaning or with DEVPREP® 88 cleaner or other suitable cleaner followed by a thorough water rinsing. For non-immersion service, prime with DEVRAN 205 or DEVRAN 203 epoxy primers. For immersion or severe moisture condition, abrasive blasting is recommended before priming with this product or DEVRAN 201. Choice of primer depends on local VOC and air quality regulations.

Previously Painted Surfaces: Old coatings should be tested for lifting. If lifting occurs, remove the lifted coating. Otherwise scuff sand glossy areas and aged epoxy coatings. Clean aged epoxy or urethane coatings with DEVPREP 88 cleaner. Remove cracked and peeling paint. Prime bare areas with primer specified under **New Surfaces**.

WARNING! If you scrape, sand, or remove old paint, you may release lead dust. LEAD IS TOXIC. EXPOSURE TO LEAD DUST CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a NIOSH-approved respirator to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead.

DIRECTIONS FOR USE

Tinting: Tint the appropriate base with CHROMA-CHEM* 844 colorants. (Do not use water based colorants). Add colorants to only the base portion. Mix thoroughly before adding the Converter portion.

Thinning: For compliance to VOC regulations, thin as follows: South Coast Air Quality Management District (SCAQMD) available in DC224FN3501 only: Thinning is not required, however, if thinning is desired, add acetone or T-0 thinner at no more than 5% by volume. Read and follow all hazard and precautionary information found on labels, data sheets and MSDS's. California outside of SCAQMD: Thinning is not required, however, if thinning is desired, add T10 Thinner at no more than 5% by volume. All other areas: Thinning is not required, however, if thinning is desired, 10% or less by volume of T-10 Thinner can be added depending on local VOC and air quality regulations. Any solvent addition should be made after the two components are thoroughly mixed.

Mixing: DEVRAN 224HS Coating is a two component product supplied in 10 gallon and 2 gallon kits which contain the proper ratio of ingredients. The entire contents of each container must be mixed together. Power mix both portions first to obtain a smooth, homogeneous condition. Then add the converter slowly with continued agitation. After the converter add is complete, continue to mix slowly. Allow the mixed material to stand 15 minutes at 60-80°F (16-27°C) before use. Always restir before use. Avoid storing or placing containers in direct sunlight.

Application: Spray is preferred for appearance and film build control. For air spray application, use a fluid tip of .070" or larger, a professional grade conventional gun and an air cap with good break-up. The fluid pressure should be kept low, with just enough air pressure to get good break-up of the coating. Excessive air pressure can cause over-spray problems. Where airless equipment is used, an airless spray pump capable of 3,000 psi (207 bars) and .019" to .025" tip size will provide a good spray pattern. Ideally, fluid hoses should not be less than 3/8" ID and not longer than 50 feet to obtain optimum results. Longer hose length may require an increase in pump capacity, pressure, and/or thinning. DEVRAN 224HS epoxy may also be applied by brush or roller. Care should be taken that proper and uniform thicknesses are obtained. For roller work use a clean synthetic roller with 1/4"-1/2" nap. New rollers should be thoroughly wet with the specified thinner and spun vigorously to remove loose fibers. Brushing and rolling may require multiple coats to achieve correct film thickness and/or hiding.

Cold Weather Applications: For substrate temperatures between 25°F (-4°C) and 40°F (5°C) cold weather additive 060A000 may be added. Two pint containers of 060A0000 may be added to the converter portion of a 10 gallon kit of DEVRAN 224HS coating. Thoroughly mix the 060A0000 additive in the converter with a power mixer prior to adding the converter to the base portion

Dry Time (ASTM D 1640)**:** At 6 Mils (150 microns) DFT with Cold Weather Additive (060A0000)

Substrate Temperature	25°F(-4°C)	30°F(-1°C)	40°F(4°C)
To Recoat	25 hours	16 hours	11 hours2
Dry Hard	>32 hours	24 hours	16 hours

Spreading Rate: Apply at 150-300 sq. ft. per gallon (4-7m^2/L) depending on surface texture and porosity. Make allowance for any losses due to overspray or surface irregularities.

Dry Time (ASTM D 1640)**:** At 77°F (25°C) & 50% R.H., dries to recoat with epoxy or urethane in 6 hours and dry hard in 9 hours.

Clean-up: Use T-10 Thinner, except in the South Coast Air Quality Management District use acetone, T-0 thinner or other solvent in compliance with local VOC and air quality regulations.

PRECAUTIONS

DANGER! COMBUSTIBLE LIQUID AND VAPOR. CORROSIVE. CAUSES EYE AND SKIN BURNS. HARMFUL OR FATAL IF SWALLOWED. ASPIRATION HAZARD - CAN ENTER LUNGS AND CAUSE DAMAGE. HARMFUL IF INHALED. MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS, INCLUDING DIZZINESS, HEADACHE OR NAUSEA. CAUSES RESPIRATORY TRACT IRRITATION. MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTION. OVEREXPOSURE MAY CAUSE BLOOD, LIVER, KIDNEY DAMAGE. CONTAINS CRYSTALLINE SILICA WHICH CAN CAUSE LUNG CANCER AND OTHER LUNG DAMAGE IF INHALED. USE ONLY WITH ADEQUATE VENTILATION. KEEP OUT OF THE REACH OF CHILDREN. NOTICE: Products in this series contain solvents. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. For emergency information call (800) 545-2643. **Note: These warnings encompass the product series. Prior to use, read and follow product-specific MSDS and label information.** For emergency information call (800) 545-2643. For additional safety information, refer to the Material Safety Data Sheet for this product. Keep away from heat, sparks and flame. **Do not** smoke. Vapors may ignite. Extinguish all flames, burners, stoves, heaters and pilot lights and disconnect all electrical motors and appliances before use and until all vapors are gone. Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation. If sanding, wear a dust mask to avoid breathing of sanding dust. Do not breathe vapors or spray mist. Ensure fresh air entry during application and drying. Avoid contact with eyes and skin. If you experience eye watering, headaches, or dizziness, leave the area. If properly used, a respirator may offer additional protection. Obtain professional advice before using. Close container after each use. **FIRST AID**: For skin contact, wash thoroughly with soap and water. If any product remains, gently rub with petroleum jelly, vegetable or mineral/baby oil then wash again with soap and water. Repeat as needed. Remove contaminated clothing. For eye contact, flush immediately with plenty of water for at least 15 minutes. **Get medical attention**. If swallowed, **get medical attention immediately**. If inhalation causes discomfort, remove to fresh air. If discomfort persists or breathing difficulty occurs, get medical attention. **KEEP FROM FREEZING.**

DS177-0306

SHIPPING

Flash Point: 100°F (38°C)

Packaging:
2 gallon kit (7.570L)
1.00 gallon base
1.00 gallon converter
10 gallon kit (37.850L)
5.00 gallon base
5.00 gallon converter

Shipping Weight:: 4 gallon case (base or converter) - 53 lbs. (24.0 kg
10 gallon kit - 133 lbs. (60.3 kg)

224HS (05/07)
Ad Stock #68634E

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